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ASSIGNMENT BOOKLET 4A

MAT1040 Mathematics Preparation 10
Module 4: Section 1 Assignment

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Time Spent on Assignment: _____	File Number: _____
	Module Number: _____

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MATHEMATICS
Preparation 10

Module 4

Polynomials

Learning Technologies Branch

Assignment Booklet 4A

Alberta LEARNING

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Summary

	Total Possible Marks	Your Marks
Section 1 Assignment	40	

Teacher's Comments

This document is intended for	
Students	✓
Teachers	✓
Administrators	
Parents	
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Mathematics Preparation 10
Module 4: Polynomials
Assignment Booklet 4A
Section 1 Assignment
Learning Technologies Branch
ISBN 0-7741-1812-1

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ASSIGNMENT BOOKLET 4A
MODULE 4: POLYNOMIALS
SECTION 1 ASSIGNMENT

Your mark for this module will be determined by how well you do your assignments in the Assignment Booklets.

This Assignment Booklet is worth 40 marks out of the total 100 marks for Module 4.

Work slowly and carefully. If you are having difficulties, go back and review the appropriate topic.

Be sure to proofread your answers carefully.

(40)

Section 1 Assignment: Operations with Polynomials

Read all parts of your assignment carefully and record your answers in the appropriate places. Clearly show how you arrived at your answers by showing your work.

1. Write an expression that has the following characteristics.

(1) **a.** a binomial of degree 3

_____

(1) **b.** a trinomial of degree 2 with a constant term of 7

_____

(2) **2.** Group the like terms in the following list.

- $2a^3b$
- 6ab
- $-a^3b$
- a
- $-4a$
- $2a$
- -9
- $\frac{3}{2}$
- 14
- ab
- $\frac{5}{2}ab^3$
- $6ab^3$

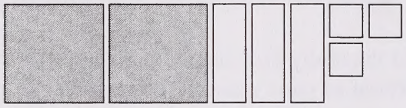
3. What is the degree of each of the following expressions?

(1) **a.** $3x^2y - 5x^2y^2$

(1) **b.** $6x^3 + 5x^2 - 2x + 1$

4. Write the expression represented by each group of tiles. **Note:** The grey tiles are positive and the white tiles are negative.

(1) **a.**



(1) **b.**

5. Simplify each expression; then evaluate if $a = -3$ and $b = 2$.

(2) **a.** $3a^2b - 2ab^2 - ab^2 + 6$

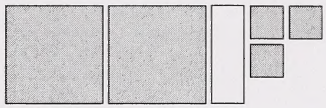
(2) **b.** $2a^2 - 6a + 4 + 2a$

(2) **6.** State the algebra tiles you must add in order to make each diagram equal to zero.

a.

_____

_____

b. 

_____

_____

7. Simplify the following expressions.

(2) **a.** $\left(3x^2-4x+2\right)+\left(x^2+2x+6\right)$

(2) **b.**
$$\begin{array}{r} 3a^2b+2ab-5b-1 \\ +\ \left(6a^2b+3ab-b+6\right) \\ \hline \end{array}$$

(2) **c.** $\left(-4y^2+2y-4\right)-\left(-6y^2+3y-2\right)$

(2) **d.**
$$\begin{array}{r} 6a^2-4a+3 \\ -\ \left(-4a^2-8a-7\right) \\ \hline \end{array}$$

8. Find the product of the following. Collect like terms where possible.

(2) **a.** $(2xy)(-4x^2)$

(2) **b.** $-4x^2(2x^2+x-6)$

(2) **c.** $(x-6)(x+1)$

(2) **d.** $(x-7)(x+7)$

(2) **e.** $(x+5)^2$

9. Find the quotient of the following.

(2) **a.** $\dfrac{24x^2 - 8x}{4x}$

(2) **b.** $\left(25x^4 - 10x^3 + 40x\right) \div 5x$

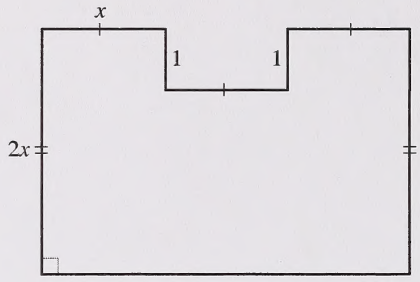
(2) **10.** A student wrote down the question correctly and then made a very common error. The student's calculation was as follows:

$$\frac{15x^2 + 5}{5} = \frac{15x^2 + \overset{1}{\cancel{5}}}{\underset{1}{\cancel{5}}}$$

$$= 15x^2 + 1$$

Explain what the student did incorrectly. Then show the correct solution.

(2) **11.** Find the area of the figure given.



Mathematics
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Assignment Booklet 4A
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ASSIGNMENT BOOKLET 4B

MAT1040 Mathematics Preparation 10
Module 4: Section 2 Assignment and Final Module Assignment

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Assignment Grading: _____

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MATHEMATICS
Preparation 10

Module 4

Polynomials

Learning Technologies Branch

Assignment Booklet 4B

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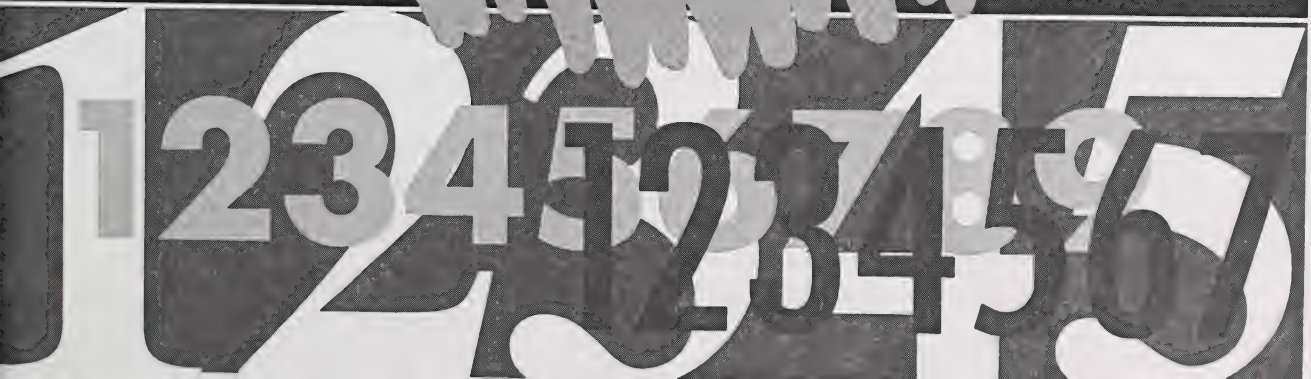

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Summary

	Total Possible Marks	Your Marks
Section 2 Assignment	20	
Final Module Assignment	40	
	60	

Teacher's Comments

This document is intended for	
Students	✓
Teachers	✓
Administrators	
Parents	
General Public	
Other	

Mathematics Preparation 10
Module 4: Polynomials
Assignment Booklet 4B
Section 2 Assignment and Final Module Assignment
Learning Technologies Branch
ISBN 0-7741-1814-8

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ASSIGNMENT BOOKLET 4B
MODULE 4: POLYNOMIALS
SECTION 2 ASSIGNMENT AND FINAL MODULE ASSIGNMENT

Your mark for this module will be determined by how well you do your assignments in the Assignment Booklets.

This Assignment Booklet is worth 60 marks out of the total 100 marks for Module 4.

Work slowly and carefully. If you are having difficulties, go back and review the appropriate topic.

Be sure to proofread your answers carefully.

Section 2 Assignment: Factoring

20

Read all parts of your assignment carefully and record your answers in the appropriate places. Clearly show how you arrived at your answers by showing your work.

1. Find the greatest common factor (GCF) of each group of terms.

(1) **a.** $25x^2,\ -5$

(1) **b.** $ab^2,\ 2ab,\ -a$

2. Find the missing factor(s).

(1) **a.** $7x^2y - 14xy = 7xy(\quad)$

(2) **b.** $2x^3 - \square\, x^2 + 4x = \square\,(x^2 - 3x + 2)$

3. Algebra tiles are arranged in a rectangle to represent $-2x + 6$.

(1) **a.** Draw the tiles that represent the factors of the polynomial.

(1) **b.** Write the expression $-2x + 6$ as a product of two factors.

_____

(1) **4.** A student correctly factored $12x^2 + 24x = 2x(6x + 12)$, but it is not considered to be completely factored. Explain.

(1) **5.** Provide an example of a binomial in one variable where the greatest common factor of its terms is 1 or -1.

(2) **6.** The area of a trapezoid can be found by finding the area of two triangles. The expression for the area is $A = \frac{ah}{2} + \frac{bh}{2}$. Completely factor this expression.

7. Factor each polynomial completely.

(1) **a.** $2x^2y - xy$

(2) **b.** $x^2 - 7x + 12$

(2) **c.** $x^2 + 4x - 12$

(2) **d.** $3x^2 + 6x + 3$

8. The greatest common factor does not need to be a monomial. The following polynomials have a binomial as the greatest common factor. Underline the common binomial; then factor.

(1) **a.** $3x(x-4) + 2(x-4)$

(1) **b.** $x(x+5) - 6(x+5)$

(40)

Final Module Assignment

Read all parts of your assignment carefully and record your answers in the appropriate places. Clearly show how you arrived at your answers by showing your work.

(2) **1.** How would you classify $-3x^2 + 2x + 1$ according to the number of terms and degree? Explain.

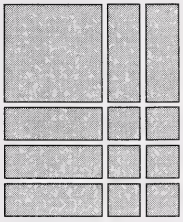
_____

_____

(2) **2.** Simplify the following expression; then evaluate if $m = -1$ and $n = 2$.

$$m^2 + mn + n^2 + 3m^2 - mn + 6n^2$$

(2) **3.** A student factored $x^2 + 5x + 6$ using algebra tiles. A portion of the student's diagram is given. Complete the diagram, and use it to write $x^2 + 5x + 6$ in factored form.



4. Perform the indicated operations.

(2) **a.** $\left(3x^2 - 4x + 5\right) - \left(x^2 + 2x + 4\right) + \left(2x^2 - 10\right)$

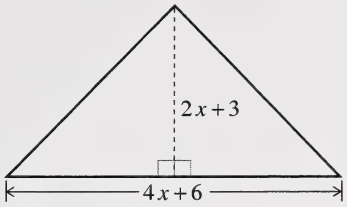
(2) **b.** $-6y^2+2y-5$
$-\quad (y^2+7)$

(1) **c.** $2xy^2(x-y+4)$

(2) **d.** $\dfrac{27x^2y-3xy+9xy^3}{3xy}$

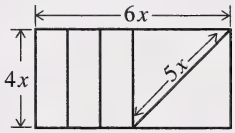
(2) **e.** $(4x-3)(x-2)$

(3) **5.** Calculate the area of the triangle given.



6. Sasha fenced a rectangular field. He divided the field in half first; then he divided one half into three equal-sized pens and the other half into two equal-sized pens (as shown in the diagram).

(2) **a.** Determine the amount of fencing required?



(1) **b.** Calculate the area of the rectangular field.

(2) **7.** Find the greatest common factor (GCF) of the following set of terms:

$8ab^2c^3,\ -16a^3bc,\ 12a^2b^4$

8. Factor the following polynomials completely.

(2) **a.** $x^2 - 8x + 16$

(1) **b.** $6x^2y + 3xy$

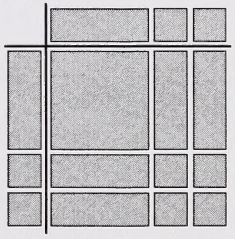
(2) **c.** $5x^2y - 125y$

(2) **d.** $-2x^2 + 10x + 12$

(3) **9.** Imagine you are making up questions to be factored in the form $x^2 + bx + 12$. You want these trinomials to be factored over the integers. Make a list of three trinomials of the form $x^2 + bx + 12$ that can be factored over the integers and show the factorization of these trinomials.

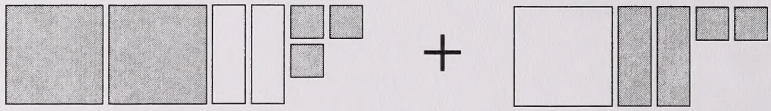
(2) **10.** Explain why $x^2 + 2x + 4$ cannot be factored over the integers.

(1) **11.** A student factored the expression $x^2 + 4x + 4$ using algebra tiles and obtained the following diagram.



Write $x^2 + 4x + 4$ in factored form.

12. Christine and Michael are using algebra tiles to add two polynomials. The first time the teacher saw the tiles, the students had correctly used the tiles to model the addition sentence.



(2) **a.** What addition question are they modelling?

(2) **b.** Describe what the students should do next in order to obtain the answer. What is the answer?

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